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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,190	01/15/2002	Francois Gonthier	519-USA	2257

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EXAMINER	
ROJAS, OMAR R	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/045,190	GONTHIER ET AL.	
	Examiner	Art Unit	
	Omar Rojas	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7,and 10-12* is/are rejected.

7)☒ Claim(s) *6,8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *Janury 15, 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The prior art documents submitted by applicant in the Information Disclosure Statement(s) filed on January 15, 2002 have all been considered and made of record (note the attached copy of form(s) PTO-1449).

Specification

3. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,218,652 to Lutz.

Regarding claims 1-4, Lutz discloses in Figure 1 an all-fiber depolarizer comprising:

A polarizing beam splitter (10) having two input fibers (12, 14), two output fibers (16, 18), and a beam splitting region (22) in-between having a polarizing ("slow") axis;

Control means (26) for controllably injecting polarized light from a light source (24) inherently having a coherence length into one of the input fibers (14) so that the polarization of the signal entering the beam splitter (10) is circular or linear at a substantially 45° angle from the polarizing axis (i.e., "slow" axis) of the beam splitter (see column 2, ll. 36-58);

A loop (28) being made of standard single-mode/non-birefringent fiber and having a length greater than the coherence length of the light source (see col. 2, ll. 59-60);

The second output fiber (16) receiving and further transmitting incoherent depolarized light produced by the interaction of the polarization beam splitter and loop.

Regarding claims 2-3 and 7, the beam splitter (10) disclosed by Lutz may comprise the coupler described in U.S. Pat. No. 4,906,068. Id. at col. 2, ll. 40-43. In the '068 patent the beam splitter is clearly shown (i.e., see Fig. 3) and described as a 2 x 2 fused fiber coupler mountable on substrate to form a unitary structure.

Regarding claim 4, although it does not appear that Lutz discloses the splitter as a "broadband" polarization splitter, the examiner takes the position that the splitter (10) of Lutz inherently has the claimed functionality of being "broadband" since the invention of Lutz is identical in all other respects to the claimed invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

> the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lutz.

Lutz differs from claim 5 in that he does not expressly disclose using a Mach-Zehnder structure as the polarization beam splitter (10)

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use a Mach-Zehnder structure in Lutz. Applicant has not disclosed that using a Mach-Zehnder structure solves a stated problem, provides an advantage, or serves a particular purpose. Furthermore, one of ordinary skill in the art would have expected the invention of Lutz to perform in a comparable manner as with that specified by claim 5.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to modify Lutz in order to obtain the invention specified by claim 5.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lutz.

Lutz differs from claim 10 in that Lutz does not expressly disclose that the length of loop (28) is "several times the coherence length of the light source." However, Lutz clearly discloses that having a loop length greater than the coherence length is desirable. Id. at col. 2, ll. 58-68. Thus, modifying the loop length to be several times greater than the coherence length would amount to optimization of a known variable (the loop length) in view of Lutz. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to modify Lutz to obtain the invention specified by claim 10.

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lutz as applied to claim 1 above, and further in view of U.S. Patent No. 5,933,555 to Shen.

Regarding claims 11-12, Lutz basically differs from the claimed invention in that Lutz does not expressly teach using another polarization beam splitter having an input fiber forming another loop with an output fiber (i.e. a "recirculation loop) and which is concatenated to and follows the other beam splitter and further having a different loop length.

Shen, on the other hand, discloses concatenated depolarizers (38, 40) having recirculation loops and beam splitters. See Fig. 4 of Shen and columns 7-8. The ordinary skilled artisan would have wanted to apply the teachings of Shen to the

invention of Lutz in order to provide increased depolarization in Lutz by the use of multiple depolarizers as taught by Shen.

With regards to the loop length of the depolarizers, as indicated with regards to claim 10, modifying the length of the loops would have involved only routine optimization of a known variable.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to modify Lutz with the teachings of Shen to obtain the invention specified by claims 11-12.

Allowable Subject Matter

11. Claims 6, 8, and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: Regarding claims 6, 8, and 9, the prior art does not disclose or suggest, alone or in combinations, using a birefringent polarization maintaining fiber as the recited control means and controllably spliced to one of the input fibers of the beam splitter. Such an unobvious feature is shown in Figure 2 of the drawings.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (703) 305-8528 and whose e-mail address is *omar.rojas@uspto.gov*. The examiner can normally be reached on Monday-Friday (7:00AM-3:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hemang Sanghavi, can be reached on (703) 305-3484. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 for regular communications. The examiner's personal work fax number is (703) 746-4751.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Omar Rojas
Patent Examiner
Art Unit 2874

or
June 16, 2003

HEMANG SANGHAVI
PRIMARY EXAMINER